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## INFORMATION REPORT INFORMATION REPORT

## CENTRAL INTELLIGENCE AGENCY

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S-E-C-R-E-T

COUNTRY East Germany

REPORT

SUBJECT VEB Vakutronik Dresden:  
Production of Counters and Radiac  
Measuring Instruments

DATE DISTR. 20 September 1956

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REFERENCES

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PLACE &  
DATE ACQ.

This is UNEVALUATED Information

SOURCE EVALUATIONS ARE DEFINITIVE APPRAISAL OF CONTENT IS TENTATIVE

1. The VEB Vakutronik, Dresden A 21, Dornbluetstrasse 14, has completed arrangements to begin series production of radiac and measuring instruments. During the first phase of the program, the following items will be produced in quantity:

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Type NumberItem

VA-G-40

Impulse densimeters

VA-B-01

Electronic decade counters (Zaehldekade)

VA-G-20

Impulse measuring desk

VA-G-21

Impulse counters

VA-3-OL

Small ray indicators (Strahlenindikatoren)

VA-Z-111,112,113)

Geiger-Mueller counter tubes of various types

" 310,320 )

" 410,420,430)

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STATE	X	ARMY	X	NAVY	X	AIR	X	FBI		AEC	X	ORR	X	OSI	X
(Note: Washington distribution indicated by "X"; Field distribution by "#".)															

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1. VEB VAKUTRONIK, DRESDEN A 21, Dornblütstrasse 14, have arrangements in hand to begin series production of radiao and measuring instruments.
2. For the first stage of their programme, VEB VAKUTRONIK will produce in quantity:

	<u>Type No.</u>
(a) Impulse densimeters	VA-G-40
(b) Electronic decade counters (Zähldekade)	VA-B-01
(c) Impulse measuring leak	VA-G-20
(d) Impulse counters	VA-G-21
(e) Small ray indicators (Strahlenindikatoren)	VA-3-0L
(f) Geiger Müller counter tubes of various types	VA-Z 111 VA-Z 112 VA-Z 113 VA-Z 310 VA-Z 320 VA Z 410 VA Z 420 VA Z 430

3. A description of each instrument with its technical specifications follows in the remainder of this report:

4. IMPULSE DENSIMETER - TYPE VA-G-40

General

The Impulse Densimeter makes possible continuous measurement of impulse densities of periodically and statically divided impulse sequences. It is suitable for use in conjunction with Geiger Müller counters as a simple laboratory device for solving nuclear physical measurement problems, determining radiation intensities and resolving such technical questions as non-destructive testing of materials, safety control, etc.

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/Technical Data:

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Technical Data

Input Sensitivity:	0.28 V
Indication of Impulse Density:	
<u>Measuring Range</u>	<u>Release Time (Auflösungszeit)</u>
600 Imp/min	3 ms
1,800 "	1 "
6,000 "	0.3 "
18,000 "	0.1 "
60,000 "	0.03 "
Matching Control:	By means of the mains frequency.
Integration period:	5 - 30 s, continually controllable $\pm 10\%$
Measurement of very slight intensities:	Through 4-position roller counter. Release time 60 ms. Counter cannot be switched back.
Acoustic Indication:	Through built-in miniature speaker (Kleinhörer)
High Tension:	0 - 1,600 V for coarse and fine tuning stabilized to $\pm 2\%$ at $\pm 10\%$ mains fluctuation.
Possible connections:	To recorder and impulse counter.
Mains:	220 V 50 c/s; alternatively 110 or 127 V.
Input:	ca. 60 VA
Measurements:	550 x 290 x 240 mm.

5. ELECTRONIC DECADE COUNTERS - TYPE VA-B-01General

This instrument is designed to facilitate self construction of electronic counters. The decades can be switched directly in series.

Technical Data

Input Impulses:	
Amplitude:	15 - 30 V negative.
Rate of rise:	ca 1 $\mu$ s
Output Impulses:	Suitable for modulating other decade counters
Release Time:	5 $\mu$ s
Indication:	Flashing lamps (Glimmlampen)

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/Feed:

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Para. 5 (cont...)

Feed:

Anode tension	330 V $-(\pm 10\%)$
Anode current	ca. 30 mA
Filament voltage	6.3 V $(\pm 10\%)$
Filament current	1.8 A
	0.6 A

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Measurements: 194 x 180 x 59 mm.,  
including valves.

6. MEASURING DESK (Messplatz) - TYPE VA-G-20General

- (i) This laboratory instrument is designed to count single impulses and simultaneously to enable their densities to be measured. It is equipped with an automatic device to allow hand switching as well as measurement by impulse selection. The duration in time of any measurement is automatically shown by a stop-clock and there is a switch-clock connection for preselected time measurements.
- (ii) The desk consists of three sound boards (Einschüben) placed in a single housing. The lower board will take, as desired, the VA-G-40 or VA-G-41 type impulse densimeter with high tension supply for the counter. The release times (Auflösungszeiten) given in para.4 above for the impulse densimeter apply when the impulse counters are connected.
- (iii) The upper and centre boards take the electronic and mechanical impulse counter equipment which can be used in connection with other measurements which rely on the counter principle - e.g. short-time measurements.

Technical DataImpulse Counter

Release Time:	5 $\mu$ s.
Counter Speed:	max. 10,000 Imp/s.
Counter capacity:	$10^6$ Imp.
Counter System:	In decades: 2 electronic decades 2 mechanical decades. Can be reset.
Impulse Selection:	$10^2$ , $10^3$ , $10^4$ , $10^5$ , $10^6$ Imp.
Time Measurement:	Built-in stop-clock to 30 min.
Connections:	Time switch if needed.

The direct input of the impulse counter corresponds to impulse and sine-shaped potentials (Spannungen) of the order of  $\geq 3$  V.

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Para.6 (cont...)

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Impulse DensimeterDetails as for VA-G-40 and  
VA-G-41

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The Measuring Desk as  
a whole

Power Supply: 220 V 50 c/s; or 110 and 127 V.  
Input: c. 200 VA  
Measurements: 600 x 550 x 200 mm.

7. IMPULSE COUNTER - TYPE VA-G-21General

This counter is designed for economy of working in radiation laboratories. Used in conjunction with Geiger-Müller counters it permits counts of single impulses.

Technical Data

Input Sensitivity: 0.25 V.  
Release Time: 30 us  
Counter Speed: max. 1500 Imp/s.  
Counter Capacity:  $10^6$  Imp.  
Counter system: In decades: 2 decades  
electronically  
4 mechanically  
Roller counter not to be set back.  
Voltage: 0 - 1,600 V  
Coarse and fine tuning  
No indicator  
Stabilized to  $\pm 2\%$  at  $\pm 10\%$   
current fluctuation.  
Power Supply: 220 V at 50 c/s; or 110 or 127 V.  
Input: ca. 120 VA  
Measurements: 400 x 220 x 220 mm.

8. SMALL RAY INDICATOR - TYPE VA-J-OLGeneral

This is a small manageable device intended to determine the position of radioactive substances in a laboratory and on the ground. Counter impulses are determined acoustically through head-phones.

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/Technical  
Data:

## Technical Data

Use: Röntgen, Gamma and Beta rays from 0.5 MeV.

Ray Detector: Geiger Müller counter

Battery Feed: Working life of about 50 hours

Measurements: 220 x 45 x 55 mm.

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## 7. GEIGER MÜLLER COUNTER TUBES

The counter tubes shown in the table below are self discharging (selbstlischend) and are fitted with an oxide coated cathode (Schichtkathode). With the exception of type VAZ 430 they are fitted with coaxial standard counter tube sockets (Standard-Zählrohrsockel).

Type VA - Z	111	112	310	320	430	410*	113	420
	Thin-walled glass Counter tube (Glas Zählrohr)	Window Counter tube (Fenster Zählrohr)	Liquid Counter tube (Flüssigkeits-zählrohr)					
Effective Counter volume in cm <sup>3</sup>	10	100	-	-	10	10	10	10
Thickness mg/cm <sup>2</sup> ca	35	50	-	-	35	35	35	35
Starting Potential (Einsatzspannung) in V ca	1000	1000	1000	1000	1000	1000	1000	1000
Minimum plane length (Plateaulänge)	200	200	150	150	200	200	200	200
Plane incline in % 100 V	≤ 5	≤ 5	≤ 10	≤ 10	≤ 5	≤ 5	≤ 5	≤ 5
Minimum life in Imp. ca	10 <sup>8</sup>	10 <sup>8</sup>	10 <sup>8</sup>	10 <sup>8</sup>	10 <sup>8</sup>	10 <sup>8</sup>	10 <sup>8</sup>	10 <sup>8</sup>
Window thickness in mg/cm <sup>2</sup>	-	-	≤ 2	ca. 3	-	-	-	-
Window diameter in mm.	-	-	30	30	-	-	-	-
Measuring volume in ml. ca.	-	-	-	-	10	-	-	50
Standard ground joint	-	-	-	-	-	29/32	-	29/32
Construction			Bell type Construction		see @	Immersion (Eintauch) Counter tube		see !

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@ = Cupette counter tube

! = Discharge (Durchfluss) counter tube

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